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Measuring Forage and Grain in Storage

Cooperative Extension South Dakota State University

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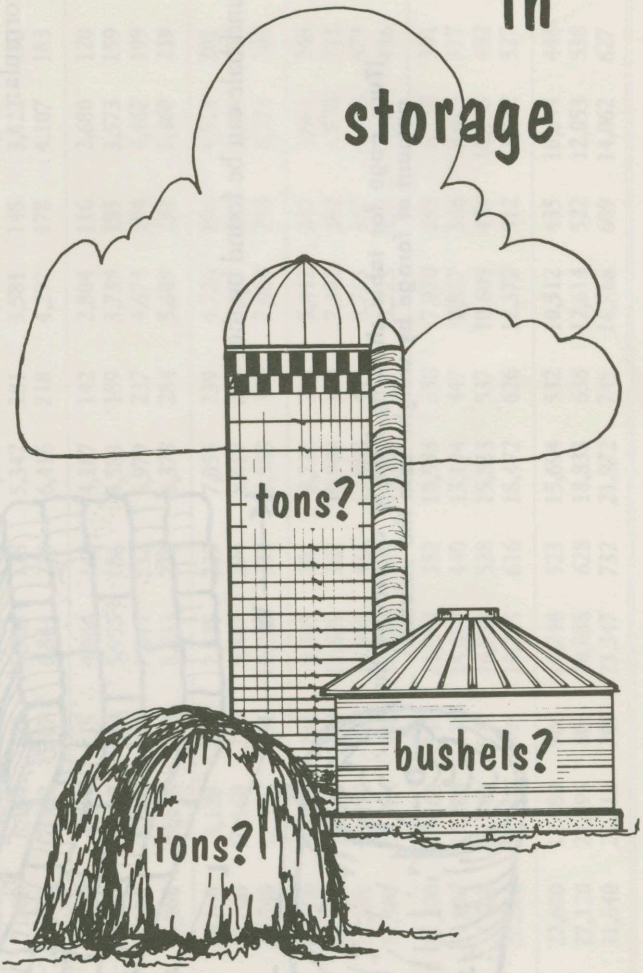
measuring forage and grain in storage



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measuring forage and grain in storage

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Every year stored forages are exchanged for one purpose or another. Quite often it is not practical to weigh these forages. An easy way to *estimate* quantity of forage is to measure volume and then convert this result into weight. Because of many variations, such as densities, moisture content, type of crop, it is difficult to obtain an accurate weight by measuring volume but an approximation can be determined.

Oblong or Rectangular Hay Stacks

The volume of a rectangular stack is equal to its length multiplied by the area of the cross section. It is easy to measure the length but the exact area of the cross section is more difficult to determine. An accurate formula is necessary for computing the area from two measurements, the width and the over, which are usually used for this purpose. Width is the width of the stack at the ground; length is the average length of the stack; and over is the distance from the ground on one side over the stack to the ground on the other side.

Several years ago it was determined that by dividing hay stacks into three types based on shape, a rule for estimating volume for each type could be developed. The volumes for these rules averaged the same as the actual volumes of the stacks with an error of less than 5%. The rule for the three types of stacks, Figure 1, is as follows:

Low round-topped stacks $(0.52 \times O - 0.44 \times W) \times WL$ = volume

High round-topped stacks $(0.52 \times O - 0.46 \times W) \times WL$ = volume

Square flat-topped stacks $(0.56 \times O - 0.55 \times W) \times WL$ = volume

In these rules O equals the *over*, W equals the *width*, and L equals the *length*.

Example:

Determine the volume of a rectangular stack of the high, round-topped type that is 20 feet wide, 45 feet over, and 30 feet long.

Volume $= (0.52 \times O - 0.46 \times W) \times WL$

Volume $= (0.52 \times 45 - 0.46 \times 20) \times (20 \times 30)$

$= (23.40 - 9.2) \times (600)$

$= (14.2) \times (600)$

$= 8{,}520.00$ cubic feet in stack

Round Hay Stacks

A table gives more accurate results than a formula for determining volume in a round stack. For stacks with a circumference between 45 and 98 feet and the over between 25 and 50 feet Table 1 can be used. To determine volumes of stacks where the over or circumference exceeds those figures given in Table 1 the following formula should be used:

$$\text{Volume} = (.04 \times O - 0.012 \times C) \times C^2$$

In this formula C equals the *circumference* or distance around the stack at the ground, and O equals the *over*, or the distance from the ground on one side over the peak to the ground on the other side. Usually it is best to take two over measurements, at right angles to each other, and to average them.

Example:

Determine the volume of a round stack 100 feet in circumference and with an average over of 60 feet.

Volume $= (.04 \times O - .012 \times C) \times C^2$

$= (.04 \times 60 - .012 \times 100) \times 100^2$

$= (2.40 - 1.2) \times 10{,}000$

$= 1.2 \times 10{,}000$

$= 12{,}000$ cubic feet in round stack

The volume determined in round stacks using either of these two methods should not vary more than 10% from the actual volume.

Hay in the Mow

The volume of hay in a mow may be determined by multiplying the length *(L)* times width *(W)* times height *(H)*, all in feet.

Example:

Determine the amount of hay in a mow that is 20 feet wide, 30 feet long and the hay is 8 feet high.

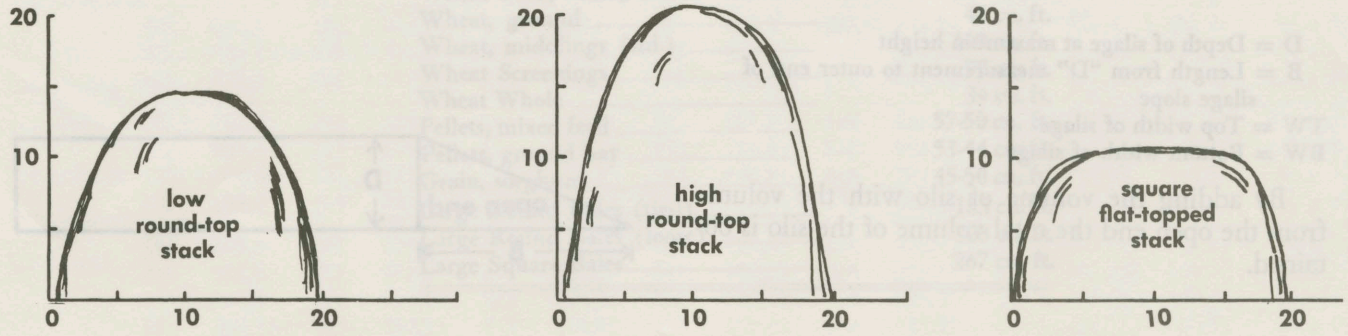
Volume $= L \times W \times H$

$= 20 \times 30 \times 8$

$= 600 \times 8$

$= 4{,}800$ cubic feet of hay in the mow

Cross section of typical oblong stacks.



Forage in a Round Silo

Two methods can be used to determine the amount of forage in a tower silo. This formula will give the volume of a silo in cubic feet:

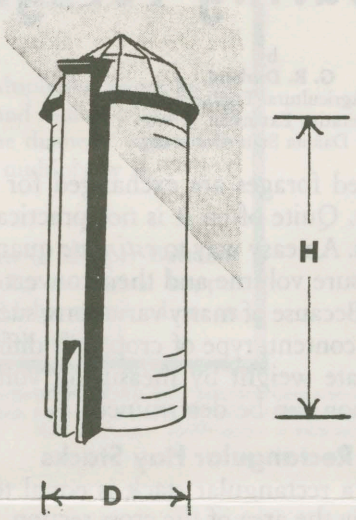
$V = .7854 \times D^2 \times H$

V = volume, cubic feet; D = diameter in feet;
H = height in feet.

Example:

Determine the volume in a 20 × 60-foot tower silo.

$V = .7854 \times (20)^2 \times 60$ feet
$= .7854 \times 400 \times 60$
$= .7854 \times 24{,}000$
= 18,849.6 cubic feet in silo.



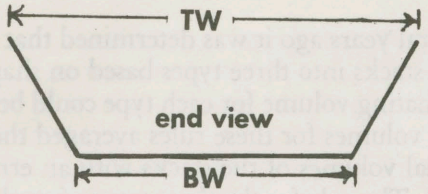
The other, and probably more accurate, method for determining capacity is by use of a table. Table 2 gives the approximate dry matter capacity of different sizes of tower silos. The dry matter capacity can be converted to tons actual silage capacity, by using the formula at the bottom of Table 2.

The silo capacity for high moisture cracked shelled corn and ground ear corn is shown in Table 3.

Forage in a Bunker Silo

Most bunker silos will have a sloping side that must be considered when figuring capacity of this type of silo. The formula that will give the capacity is:

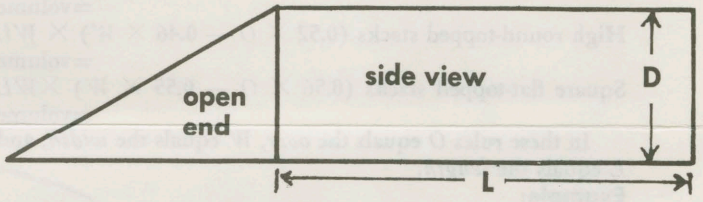
$$V = \frac{BW + TW}{2} \times L \times D$$



BW = Bottom Width
TW = Top Width
L = Length
D = Depth of silage

If the silage in a sloping open end is to be included then this quantity must be measured. The volume of this part is given by the following formula:

$$\text{open end}\quad V = \frac{B \times D \times (TW + BW)}{4}$$



D = Depth of silage at maximum height
B = Length from "D" measurement to outer end of silage slope
TW = Top width of silage
BW = Bottom width of silage

By adding the volume of silo with the volume from the open end the total volume of the silo is obtained.

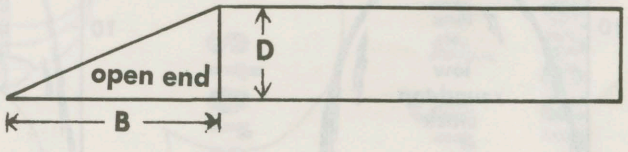


Table 1. Volume of round stacks of hay of specified dimensions. (Volume figures given to the nearest 5). (From "Measuring Hay in Stacks," USDA Leaflet No. 72)

Circumference (feet)	Indicated volume in cubic feet when the over is—												
	25 feet	26 feet	27 feet	28 feet	29 feet	30 feet	31 feet	32 feet	33 feet	34 feet	35 feet	36 feet	37 feet
45	825	960	1,090										
46	840	975	1,105	1,235									
47	855	990	1,120	1,250	1,385	1,505							
48	870	1,005	1,135	1,265	1,400	1,525	1,650	1,785					
49	885	1,020	1,150	1,285	1,420	1,540	1,670	1,805	1,935				
50	900	1,035	1,165	1,300	1,435	1,560	1,690	1,825	1,955	2,090	2,215		
51	915	1,050	1,180	1,315	1,450	1,580	1,710	1,845	1,980	2,110	2,240	2,370	2,495
52	930	1,065	1,200	1,330	1,465	1,600	1,730	1,865	2,000	2,130	2,265	2,400	2,530
53	945	1,080	1,215	1,345	1,485	1,615	1,750	1,880	2,020	2,155	2,290	2,430	2,560
54	960	1,095	1,230	1,360	1,500	1,630	1,770	1,900	2,040	2,180	2,320	2,460	2,595
55	975	1,110	1,245	1,380	1,515	1,650	1,790	1,920	2,065	2,205	2,345	2,490	2,630
56	990	1,125	1,260	1,395	1,530	1,665	1,810	1,940	2,085	2,230	2,375	2,520	2,660
57	1,005	1,140	1,275	1,410	1,550	1,685	1,830	1,960	2,105	2,250	2,400	2,545	2,695
58	1,020	1,155	1,290	1,435	1,565	1,705	1,850	1,980	2,125	2,275	2,425	2,575	2,725
59	1,035	1,170	1,310	1,450	1,580	1,720	1,865	2,000	2,150	2,300	2,455	2,605	2,755
60	1,050	1,185	1,325	1,465	1,600	1,740	1,885	2,020	2,170	2,325	2,480	2,635	2,790
61	1,065	1,200	1,340	1,485	1,615	1,760	1,905	2,040	2,195	2,345	2,510	2,665	2,825
62	1,080	1,215	1,355	1,500	1,635	1,775	1,925	2,060	2,215	2,365	2,535	2,695	2,855
63	1,095	1,230	1,370	1,515	1,655	1,795	1,945	2,080	2,235	2,390	2,560	2,725	2,890
64	1,110	1,245	1,385	1,530	1,670	1,810	1,960	2,100	2,260	2,415	2,585	2,755	2,920
65	1,125	1,260	1,400	1,545	1,685	1,830	1,980	2,120	2,280	2,440	2,615	2,780	2,950
66	1,140	1,275	1,420	1,560	1,705	1,850	2,000	2,140	2,300	2,465	2,640	2,810	2,985
67	1,155	1,290	1,435	1,575	1,720	1,865	2,020	2,160	2,325	2,485	2,665	2,840	3,015
68	1,170	1,305	1,450	1,595	1,740	1,885	2,040	2,180	2,345	2,510	2,690	2,870	3,050
69	1,185	1,320	1,465	1,610	1,755	1,905	2,055	2,200	2,365	2,530	2,715	2,900	3,080
70	1,200	1,335	1,480	1,625	1,770	1,925	2,075	2,220	2,385	2,555	2,745	2,930	3,115
71	1,215	1,350	1,495	1,640	1,790	1,940	2,095	2,240	2,405	2,580	2,770	2,960	3,145
72	1,230	1,365	1,515	1,660	1,805	1,960	2,115	2,260	2,430	2,605	2,795	2,990	3,175
73	1,245	1,380	1,530	1,675	1,820	1,975	2,135	2,280	2,450	2,625	2,825	3,015	3,210
74	1,260	1,395	1,545	1,690	1,840	1,995	2,150	2,300	2,470	2,650	2,850	3,045	3,245
75		1,410	1,560	1,705	1,855	2,010	2,170	2,320	2,495	2,675	2,875	3,075	3,275
76		1,425	1,575	1,725	1,870	2,030	2,190	2,340	2,515	2,695	2,905	3,105	3,310
77			1,590	1,740	1,890	2,050	2,210	2,360	2,540	2,720	2,930	3,135	3,340
78			1,605	1,755	1,905	2,070	2,230	2,380	2,560	2,745	2,955	3,165	3,375
79				1,775	1,925	2,090	2,250	2,400	2,580	2,765	2,980	3,195	3,405
80				1,790	1,945	2,105	2,270	2,420	2,605	2,790	3,010	3,225	3,440
81				1,805	1,960	2,125	2,285	2,440	2,625	2,815	3,035	3,255	3,470
82				1,820	1,975	2,145	2,305	2,460	2,645	2,835	3,060	3,280	3,500
83					1,995	2,160	2,325	2,480	2,665	2,860	3,090	3,310	3,535
84						2,180	2,345	2,500	2,690	2,880	3,115	3,340	3,570
85								2,520	2,710	2,905	3,140	3,370	3,600
86									2,735	2,930	3,170	3,400	3,635
87											3,195	3,430	3,665
88												3,460	3,700
89												3,490	3,730
90													3,765
91													
92													
93													
94													
95													
96													
97													
98													

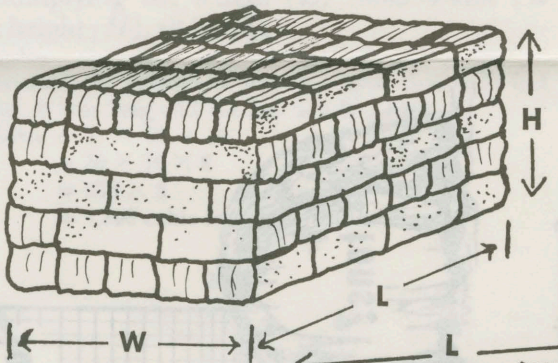
Circumference (feet)	Indicated volume in cubic feet when the over is-												
	38 feet	39 feet	40 feet	41 feet	42 feet	43 feet	44 feet	45 feet	46 feet	47 feet	48 feet	49 feet	50 feet
45													
46													
47													
48													
49													
50													
51													
52	2,665	2,795											
53	2,700	2,835	2,975										
54	2,735	2,875	3,015	3,160									
55	2,770	2,915	3,060	3,210	3,360	3,505							
56	2,805	2,955	3,105	3,255	3,415	3,565	3,720						
57	2,845	2,995	3,150	3,305	3,465	3,625	3,785	3,940					
58	2,880	3,035	3,195	3,350	3,515	3,680	3,850	4,010	4,175				
59	2,915	3,075	3,235	3,400	3,570	3,740	3,915	4,080	4,245	4,415			
60	2,950	3,115	3,280	3,445	3,625	3,795	3,975	4,150	4,320	4,490	4,670		
61	2,985	3,155	3,325	3,495	3,675	3,855	4,040	4,215	4,390	4,570	4,750	4,925	
62	3,020	3,195	3,365	3,540	3,730	3,915	4,105	4,285	4,465	4,650	4,830	5,015	5,200
63	3,055	3,235	3,410	3,585	3,780	3,970	4,165	4,355	4,540	4,730	4,910	5,105	5,295
64	3,090	3,275	3,455	3,635	3,835	4,030	4,230	4,425	4,615	4,805	4,995	5,195	5,390
65	3,125	3,315	3,495	3,680	3,885	4,085	4,290	4,490	4,690	4,885	5,075	5,285	5,485
66	3,160	3,355	3,540	3,730	3,935	4,145	4,355	4,560	4,760	4,960	5,160	5,370	5,580
67	3,195	3,395	3,585	3,780	3,990	4,205	4,420	4,630	4,830	5,040	5,245	5,460	5,670
68	3,230	3,430	3,630	3,825	4,045	4,265	4,485	4,695	4,900	5,120	5,330	5,550	5,765
69	3,265	3,470	3,670	3,875	4,095	4,320	4,545	4,760	4,970	5,195	5,415	5,640	5,860
70	3,300	3,510	3,715	3,920	4,150	4,375	4,610	4,825	5,045	5,275	5,495	5,730	5,955
71	3,335	3,550	3,760	3,970	4,205	4,435	4,670	4,895	5,120	5,355	5,580	5,820	6,050
72	3,375	3,590	3,805	4,015	4,255	4,495	4,735	4,965	5,195	5,435	5,665	5,910	6,145
73	3,410	3,630	3,845	4,065	4,310	4,550	4,795	5,030	5,270	5,515	5,750	6,000	6,240
74	3,445	3,665	3,890	4,110	4,360	4,610	4,855	5,095	5,340	5,595	5,835	6,090	6,335
75	3,480	3,705	3,935	4,160	4,415	4,670	4,915	5,165	5,415	5,675	5,915	6,180	6,430
76	3,515	3,745	3,975	4,205	4,465	4,725	4,980	5,235	5,490	5,750	6,000	6,270	6,525
77	3,550	3,785	4,020	4,250	4,520	4,785	5,045	5,305	5,560	5,830	6,085	6,355	6,620
78	3,585	3,825	4,065	4,300	4,570	4,840	5,105	5,370	5,635	5,910	6,170	6,445	6,715
79	3,620	3,865	4,105	4,345	4,625	4,895	5,170	5,440	5,710	5,990	6,255	6,535	6,810
80	3,655	3,905	4,150	4,395	4,675	4,955	5,235	5,510	5,785	6,070	6,340	6,625	6,905
81	3,690	3,945	4,195	4,440	4,730	5,010	5,295	5,575	5,855	6,145	6,425	6,715	7,000
82	3,725	3,985	4,240	4,490	4,785	5,070	5,360	5,645	5,930	6,225	6,510	6,800	7,090
83	3,760	4,025	4,280	4,535	4,830	5,130	5,425	5,715	6,005	6,305	6,595	6,890	7,185
84	3,795	4,065	4,325	4,580	4,885	5,190	5,485	5,785	6,080	6,385	6,675	6,980	7,280
85	3,830	4,105	4,365	4,630	4,935	5,245	5,550	5,850	6,155	6,465	6,760	7,070	7,375
86	3,865	4,145	4,410	4,675	4,990	5,300	5,615	5,920	6,230	6,545	6,845	7,160	7,470
87	3,900	4,185	4,455	4,725	5,040	5,360	5,680	5,990	6,300	6,620	6,930	7,250	7,565
88	3,940	4,220	4,500	4,770	5,090	5,420	5,745	6,060	6,375	6,700	7,015	7,340	7,660
89	3,975	4,260	4,540	4,815	5,145	5,475	5,805	6,125	6,450	6,780	7,100	7,430	7,755
90	4,010	4,300	4,585	4,860	5,200	5,535	5,865	6,195	6,525	6,860	7,185	7,520	7,845
91	4,045	4,340	4,630	4,910	5,250	5,595	5,930	6,265	6,600	6,940	7,270	7,605	7,940
92	4,080	4,380	4,670	4,955	5,305	5,650	5,995	6,335	6,675	7,020	7,355	7,695	8,035
93		4,420	4,715	5,005	5,360	5,710	6,055	6,400	6,750	7,095	7,440	7,785	8,130
94		4,460	4,760	5,050	5,410	5,765	6,120	6,470	6,825	7,175	7,525	7,875	8,225
95			4,805	5,100	5,465	5,825	6,180	6,540	6,895	7,255	7,610	7,965	8,320
96				5,150	5,515	5,885	6,245	6,610	6,970	7,335	7,695	8,055	8,415
97				5,195	5,570	5,945	6,310	6,680	7,045	7,415	7,780	8,145	8,510
98					5,625	6,000	6,370	6,750	7,120	7,495	7,865	8,235	8,605

Baled Hay in Rectangular Stack

The volume of a rectangular stack of hay can be found by the following formula:

$V = H \times L \times W$

H = height of pile
L = length of pile
W = width of pile
V=volume



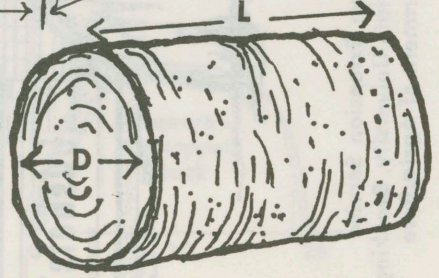
The volume of a round bale can be found by the following formula:

V=.7854 x D x D x L

V=volume

D=diameter

L=length



(Turn page for table showing how to determine the amount of forage by weight from the volume.)

Table 2—Silo Capacity Chart

The amount of dry matter a silo holds depends somewhat on the kind of feed but more on fineness of chop, type of distribution and speed with which it is filled. For this reason, we have determined the average dry matter capacity of most size silos finely chopped and well distributed, with a given dry matter for a given size silo. The total tonnage in the silo depends largely on the moisture content. (From: Silo Operator's Manual, National Silo Association).

Size	Cu. Ft.	Dry Matter	Approximate Tons Silage 50% Moisture	Approximate Tons Silage 65% Moisture
14 x 50	7700	60	120	171
16 x 30	6030	38	76	109
16 x 40	8040	56	112	161
16 x 50	10050	76	152	218
16 x 60	12060	101	202	288
18 x 40	10160	72	144	206
18 x 50	12700	96	192	274
18 x 60	15240	128	256	365
18 x 65	16510	147	294	421
18 x 70	17780	161	322	459
20 x 40	12560	90	180	256
20 x 50	15700	118	236	339
20 x 60	18840	158	316	452
20 x 65	20410	183	366	523
20 x 70	21980	199	398	568
20 x 80	25120	245	490	700
22 x 40	15200	109	218	312
22 x 50	19000	151	302	433

Table 2—continued.

Size	Cu. Ft.	Dry Matter	Approximate Tons Silage 50% Moisture	Approximate Tons Silage 65% Moisture
22 x 60	22800	192	384	549
22 x 70	36600	241	482	690
22 x 80	30400	299	598	853
24 x 50	22600	174	348	497
24 x 60	27120	228	456	651
24 x 70	31640	288	576	823
24 x 80	36160	360	720	1027
26 x 50	26500	206	412	590
26 x 60	31800	270	540	771
26 x 70	37100	339	678	969
26 x 80	42400	429	858	1226
30 x 50	35300	270	540	771
30 x 60	42360	363	726	1037
30 x 70	49420	470	941	1344
30 x 80	56480	594	1188	1697
30 x 90	63540	771	1542	2203
36 x 60	61020	533	1066	1522
36 x 70	71190	686	1373	1961
36 x 80	81360	891	1782	2546
36 x 90	91530	1041	2082	2974
40 x 60	75360	679	1358	1939
40 x 70	87920	859	1718	2455
40 x 80	100480	1108	2216	3165
40 x 90	113040	1301	2602	3717

For capacity at a different moisture content use the following formula:

$$\frac{\text{Tons Dry Matter (from chart)}}{1.00 - \text{desired moisture content}} = \text{—— tons in silo at desired moisture content}$$

Example:
How many tons of 60% moisture silage in a 24x60-foot silo?

$$\frac{228}{1.00-.60} = 570 \text{ tons 60\% moisture silage}$$

Table 3. Silo Capacity Chart. High moisture cracked shelled corn and ground ear corn at different moisture content percentages. (From: Silo Operator's Manual, National Silo Association.)

Size ft. Silo	Cubic Feet in Silo	56 lbs. Per Bu. 1.25 Cu. Ft. Per Bu. 15.5% Cracked Shelled Corn Bu.	Ton	62.5 lbs. Per Bu. 1.35 Cu. Ft. Per Bu. 24% Cracked Shelled Corn Bu.	Ton	67.8 lbs. Per Bu. 1.44 Cu. Ft. Per Bu. 30% Cracked Shelled Corn Bu.	Ton	82.8 lbs. Per Bu. 2.15 Cu. Ft. Per Bu. 24% Ground Ear Corn Bu.	Ton	89.2 lbs. Per Bu. 2.25 Cu. Ft. Per Bu. 28% Ground Ear Corn Bu.	Ton	94.6 lbs. Per Bu. 2.34 Cu. Ft. Per Bu. 32% Ground Ear Corn Bu.	Ton
14 x 30	4,620	3,696	103	3,422	107	3,208	109	2,148	89	2,053	92	1,974	93
14 x 40	6,160	4,928	129	4,562	143	4,277	145	2,865	119	2,738	122	2,632	124
14 x 50	7,700	6,160	173	5,703	178	5,347	181	3,581	148	3,422	153	3,291	156
14 x 60	9,240	7,392	207	6,844	214	6,416	218	4,297	178	4,107	183	3,949	187
16 x 30	6,030	4,824	135	4,466	140	4,187	142	2,804	116	2,680	120	2,577	122
16 x 40	8,040	6,432	180	5,955	186	5,583	189	3,739	155	3,573	159	3,436	163
16 x 50	10,050	8,040	225	7,444	232	6,979	237	4,674	194	4,467	199	4,295	203
16 x 60	12,060	9,648	270	8,933	279	8,375	284	5,609	232	5,360	239	5,154	244
18 x 40	10,160	8,128	228	7,525	235	7,055	239	4,726	196	4,516	201	4,342	205
18 x 50	12,700	10,160	285	9,407	294	8,819	299	5,907	245	5,644	252	5,427	257
18 x 60	15,240	12,192	341	11,288	353	10,583	359	7,088	293	6,773	302	6,513	308
20 x 40	12,560	10,048	281	9,303	291	8,722	296	5,842	242	5,582	249	5,367	254
20 x 50	15,700	12,560	352	11,629	363	10,902	370	7,302	302	6,978	311	6,709	317
20 x 60	18,840	15,072	422	13,955	436	13,083	443	8,763	362	8,373	373	8,051	381
20 x 70	21,980	17,584	492	16,280	509	15,263	517	10,223	423	9,769	436	9,393	444
22 x 40	15,200	12,160	341	11,259	352	10,555	358	7,070	293	6,756	301	6,496	307
22 x 50	19,000	15,200	426	14,074	440	13,194	447	8,837	366	8,444	377	8,119	384
22 x 60	22,800	18,240	511	16,888	528	15,833	537	10,605	439	10,133	452	9,744	461
22 x 70	26,600	21,260	595	19,703	616	18,472	626	12,372	512	11,822	527	11,368	538
24 x 50	22,600	18,080	506	16,740	523	15,694	532	10,512	435	10,044	448	9,658	457
24 x 60	27,120	21,696	608	20,088	628	18,833	638	12,614	522	12,053	538	11,590	548
24 x 70	31,640	25,312	709	23,347	732	21,972	745	14,716	609	14,062	627	13,521	640

Quantity by Weight

After the volume of forage has been determined it is quite easy to obtain the quantity by weight. First, the density, cubic feet per ton, of the material must be determined and this can be done by using the following table. Then divide the density into total volume to obtain total quantity by weight.

Cubic Feet Per Ton of Feed

Kind of Feed	Length of time in storage	
	30 to 90 days	90 + days
Timothy hay	640 cu. ft.	625 cu. ft.
Clover-timothy hay	580 cu. ft.	515 cu. ft.
Wild hay	600 cu. ft.	450 cu. ft.
Alfalfa hay	485 cu. ft.	470 cu. ft.
Alfalfa hay (mobile stack machine)		360 cu. ft.
Chopped alfalfa hay (cut ⅜" lengths)		150 cu. ft.
Chopped alfalfa hay (cut ½" lengths)		260 cu. ft.
Chopped alfalfa hay (cut 1" lengths)		300 cu. ft.
Chopped alfalfa hay (cut 2" lengths)		370 cu. ft.
Silage, Corn (Bunker silo)		60 cu. ft.
Haylage (Bunker silo)		85 cu. ft.
Regular Bales Hay		133 cu. ft.
Tight Bales Hay		100 cu. ft.
Silage Corn (Upright silo)		50 cu. ft.
Haylage (Upright silo)		65 cu. ft.
Alfalfa Meal		134 cu. ft.
Alfalfa, Chopped		170 cu. ft.
Barley, Meal		72 cu. ft.
Barley, Whole		53 cu. ft.
Concentrates, typical		45 cu. ft.
Corn Meal		53 cu. ft.
Corn and Cob Meal, dry		56 cu. ft.
Corn and Cob Meal, 30% moist		51 cu. ft.
Corn, shelled		
25% moisture		46 cu. ft.
30% moisture		51 cu. ft.
Corn, Ground Ear		
24% moisture		52 cu. ft.
28% moisture		50 cu. ft.
32% moisture		49.5 cu. ft.
Linseed Meal		88 cu. ft.
Molasses		26 cu. ft.
Oats, Ground		106 cu. ft.
Oats, Whole		78 cu. ft.
Rye		45 cu. ft.
Soybean Meal		48 cu. ft.
Tankage		63 cu. ft.
Wheat, Bran		154 cu. ft.
Wheat Feed, Mixed		134 cu. ft.
Wheat, ground		46 cu. ft.
Wheat, middlings (std.)		100 cu. ft.
Wheat Screenings		77 cu. ft.
Wheat Whole		34 cu. ft.
Pellets, mixed feed		57-50 cu. ft.
Pellets, ground hay		53-44 cu. ft.
Grain, sorghum		45-50 cu. ft.
Large Round Bales (tied)		183 cu. ft.
Large Round Bales (loose)		328 cu. ft.
Large Square Bales		267 cu. ft.

Grain Bin Capacity

● **Bushels of Grain or Shelled Corn in Bin.** Multiply the length by the width by the depth (all in feet), and multiply by 0.8.* If the bin is round multiply .7854 by the diameter squared, by the height (all in feet), and multiply by .8.

*Based on 1.25 cu. ft. per bushel.

● **Bushels of Ear Corn in Crib.** Multiply the length by the width by average depth (all in feet), and multiply by 0.4.* If the crib is round multiply .7854 by the diameter squared by the depth of the corn (all in feet), and multiply by .4.

*Based on 2½ cu. ft. per bushel.

● **Bushels of Grain or Shelled Corn in Hopper Bottoms.** The capacity contained in a rectangular or conical hopper bottom is one-third that which would be contained in an equivalent height of the bin to which it is attached.

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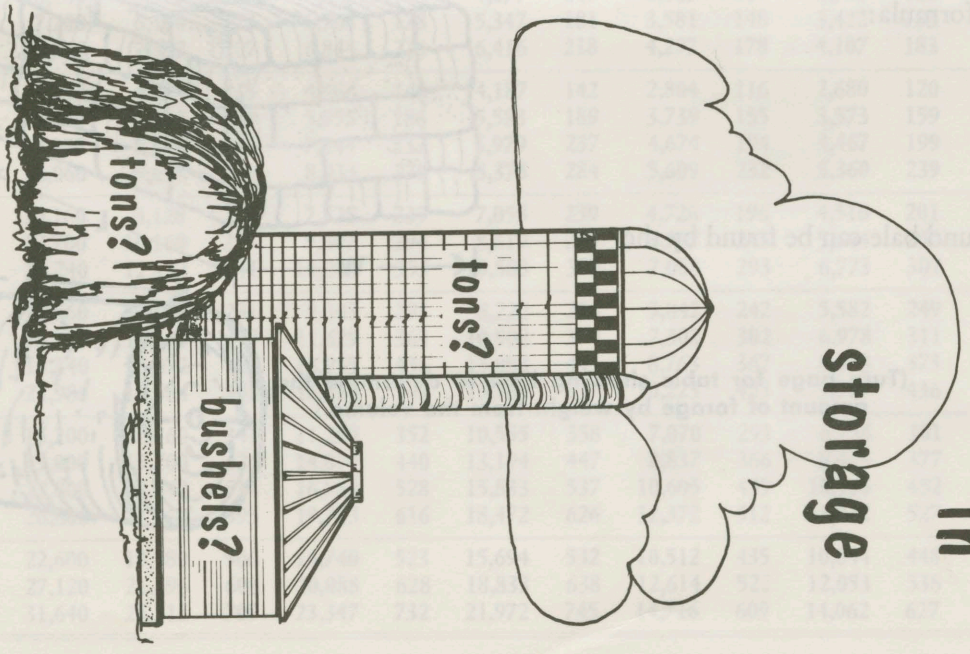

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